Chapter HFS 157

APPENDIX I

QUANTITIES FOR USE WITH DECOMMISSIONING UNDER SECTION HFS 157.15

NOTE: To convert μCi to kBq, multiply the μCi value by 37.

Material	Microcurie
Americium−241	0.01
Antimony−122	100
Antimony−124	10
Antimony−125	10
Arsenic−73	100
Arsenic−74	10
Arsenic−76	10
Arsenic−77	100
Barium−131	10
Barium−133	10
Barium−140	10
Bismuth−210	1
Bromine−82	10
Cadmium−109	10
Cadmium−115m	10
Cadmium−115	100
Calcium−45	10
Calcium−47	10
Carbon−14	100
Cerium−141	100
Cerium−143	100
Cerium−144	1
Cesium−131	1,000
Cesium−134m	100
Cesium−134	1
Cesium−135	10
Cesium−136	10
Cesium−137	10
Chlorine−36	10
Chlorine−38	10
Chromium−51	1,000
Cobalt−58m	10
Cobalt−58	10
Cobalt−60	1
Copper−64	100
Dysprosium−165	10
Dysprosium−166	100

Material	Microcurie
Erbium−169	100
Erbium−171	100
Europium−152 (9.2 h)	100
Europium−152 (13 yr)	1
Europium−154	1
Europium−155	10
Fluorine−18	1,000
Gadolinium−153	10
Gadolinium−159	100
Gallium−72	10
Germanium−71	0
Gold−198	100
Gold−199	100
Hafnium−181	10
Holmium−166	100
Hydrogen−3	1,000
Indium−113m	100
Indium−114m	10
Indium−115m	100
Indium−115	10
Iodine−125	1
Iodine−126	1
Iodine−129	0.1
Iodine−131	1
Iodine−132	10
Iodine−133	1
Iodine−134	10
Iodine−135	10
Iridium−192	10
Iridium−194	100
Iron−55	100
Iron−59	10
Krypton−85	100
Krypton−87	10
Lanthanum−140	10
Lutetium−177	100
Manganese−52	10
Manganese−54	10
Manganese−56	10
Mercury−197m	100
Mercury−197	100
Mercury−203	10

Material	**Microcurie**
Molybdenum−99	100
Neodymium−147	100
Neodymium−149	100
Nickel−59	100
Nickel−63	10
Nickel−65	100
Niobium−93m	10
Niobium−95	10
Niobium−97	10
Osmium−185	10
Osmium−191m	100
Osmium−191	100
Osmium−193	100
Palladium−103	100
Palladium−109	100
Phosphorus−32	10
Platinum−191	100
Platinum−193m	100
Platinum−193	100
Platinum−197m	100
Platinum−197	100
Plutonium−239	0.01
Polonium−210	0.1
Potassium−42	10
Praseodymium−142	100
Praseodymium−143	100
Promethium−147	10
Promethium−149	10
Radium−226	0.01
Rhenium−186	100
Rhenium−188	100
Rhodium−103m	100
Rhodium−105	100
Rubidium−86	10
Rubidium−87	10
Ruthenium−97	100
Ruthenium−103	10
Ruthenium−105	10
Ruthenium−106	1
Samarium−151	10
Samarium−153	100

Material	Microcurie
Scandium−46	10
Scandium−47	100
Scandium−48	10
Selenium−75	10
Silicon−31	100
Silver−105	10
Silver−110m	1
Silver−111	100
Sodium−22	1
Sodium−24	10
Strontium−85	10
Strontium−89	1
Strontium−90	0.1
Strontium−91	10
Strontium−92	10
Sulfur −35	100
Tantalum−182	10
Technetium−96	10
Technetium−97m	100
Technetium−97	100
Technetium−99m	100
Technetium−99	10
Tellurium−125m	10
Tellurium−127m	10
Tellurium−127	100
Tellurium−129m	10
Tellurium−129	100
Tellurium−131m	10
Tellurium−132	10
Terbium−160	10
Thallium−200	100
Thallium−201	100
Thallium−202	100
Thallium−204	10
Thorium (natural)[c/]	100
Thulium−170	10
Thulium−171	10
Tin−113	10
Tin−125	10
Tungsten−181	10
Tungsten−185	10

Material	**Microcurie**
Tungsten−187	100
Uranium (natural)[d/]	100
Uranium−233	0.01
Uranium−234	0.01
Uranium−235	0.01
Vanadium−48	10
Xenon−131m	1,000
Xenon−133	100
Xenon−135	100
Ytterbium−175	100
Yttrium−90	10
Yttrium−91	10
Yttrium−92	100
Yttrium−93	100
Zinc−65	10
Zinc− 69m	100
Zinc−69	1,000
Zirconium−93	10
Zirconium−95	10
Zirconium−97	10
Any alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	0.01
Any radionuclide other than alpha emitting radionuclides, not listed above or mixtures of beta emitters of unknown composition	0.1

[c/] *Based on alpha disintegration rate of Th−232, , Th−230 and their daughter products.*

[d/] *Based on alpha disintegration rate of U−238, U−234, and U−235*

Note: Where there is involved a combination of isotopes in known amounts, the limit for the combination should be derived as follows: Determine, for each isotope in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific isotope when not in combination. The sum of the ratios for all the isotopes in the combination may not exceed "1" – that is, unity.